CASE STUDY

North Austin Medical Center Expansion

Intense schedule milestones reached through planning, communication and can-do approach—without disruption to hospital patients

The St. David’s North Austin Medical Center expansion was one of the most complex and high-stakes healthcare projects that many on the DPR project team had ever encountered. Delivered in four concurrent phases, within some of the most critical patient areas in a fully operational hospital, the project required a team committed to employing extraordinary measures to preserve patient care while also completing the job as planned. Through communication and planning, the team reached intense schedule milestones without disruption to hospital patients.

The $34-million project expanded and renovated portions of the medical center that DPR constructed a few years earlier. That initial $83-million, 175,000-sq.-ft. women’s center expansion project, completed by DPR in 2009, helped catapult St. David’s North Austin Medical Center to its current position as the largest women’s center in Central Texas, according to its Chief Operating Officer (COO), Sheri Dube. But continued growth and increased patient demand necessitated a major expansion of the facility just five years later.

The most recent project includes 95,000 sq. ft. of vertical expansion, new construction and interior renovation work on the campus. The team worked in four phases that occurred simultaneously in different areas of the busy, fully operational hospital. They included:

- **Antepartum vertical expansion**: This 32,000-sq.-ft. vertical expansion over the existing radiology department included 26 patient beds and relocated a mechanical penthouse.
• **NICU vertical expansion:** This 20,000-sq.-ft. vertical expansion took place directly adjacent to the existing neonatal intensive care unit (NICU). It included 20 new NICU bays and the relocation of the mechanical penthouse.

• **Surgery shell addition:** This 25,000-sq.-ft. addition to the existing building connected the women’s center tower to the operating rooms and sterile core of the existing hospital.

• **Pediatrics ED and PICU renovations:** This phase included 20,000 sq. ft. in renovations, including a new ambulance canopy/entrance, exam rooms, pediatric intensive care unit (PICU) rooms, trauma room, CT scan and radiology. This project also included the installation of a new elevator inside the hospital to transfer patients from the first floor emergency department (ED) to the second floor PICU.

**No Surprises**

The team completed all of the work on a highly accelerated, 12-month schedule and turned the project over to the owner in late 2014. In many cases, work took place directly in the middle of the most sensitive areas of patient care, including around newborns and critically ill babies. The stakes couldn’t have been any higher; in fact, the team was informed that loud noises could sometimes make such fragile babies forget to breathe.

The overriding goal was to minimize the impact and disruption to existing operations. The DPR team adopted and lived the motto “No surprises.” They worked hard to achieve the highest level of communication and collaboration possible with the hospital’s many departments and end users, always keeping patient needs at the forefront.

**St. David’s North Austin Medical Center Patient Tower Project**

It wasn’t déjà vu: DPR had been at St. David’s North Austin Medical Center before. Back in 2009, DPR built a 175,000-sq.-ft., three-level patient tower and renovated 23,000 sq. ft. of existing space. The project also included a vertical and horizontal expansion at the campus with a surgery center and medical offices on the ground floor.

A major challenge of the latest project was removing exterior precast panels to expose the substructure so the team could verify field measurements. However, removing the panels left the exterior skin vulnerable to weather and environmental breaches. While the areas behind the precast remained in operation, the team constantly came up with new ways to install temporary weather protection and monitor the installations as well as coordinate with the facility and end users for shutdowns. The team also used building information modeling (BIM) as a tool to give subcontractors a view of the underground work. The original project gave the DPR team a solid foundation of the campus for the latest project.

**PAST PROJECT PROFILE**

**CUSTOMER:** St. David’s North Austin Medical Center  
**ARCHITECT:** Earl Swensson Associates, Inc.  
**DURATION:** 21 months
Minimizing Impact

DPR knew from the outset it would require some extraordinary measures to minimize impact on existing operations. One solution was to construct a temporary six-inch-thick sound barrier wall inside of the NICU to muffle as much construction noise and impact as possible, since work took place just feet from tiny infants receiving lifesaving care. The team used heavy protective plastic and clean suits each time that they moved or modified the sound wall to isolate the work areas. Every time the team moved the wall and re-erected it in a new space, they had to sterilize it for infection control.

“There was no handbook for this one,” commented DPR’s Angie Weyant. “Parents go in there, and the last thing they want to see is construction going on right next to their sick babies. Our goal was to make it look like nothing was happening while we were in there.”

Exceeding Expectations

To ensure that all impacted hospital departments and staff members knew exactly what was coming up along the way, the team held weekly coordination meetings with every department director impacted by construction as well as hospital administration. Weyant provided color-coded, easy-to-understand illustrations outlining upcoming construction work and the degree of impact that the staff could expect. She was in nearly constant contact with the hospital’s Director of Women’s Services, Yvette McDonald. “I think I talked to her more than my husband during this project,” Weyant said with a laugh.

From the hospital’s perspective, the DPR team lived its “No surprises” motto and exceeded the owner’s already high expectations on the project that expanded a hospital that DPR built just a few years before.
“In a word, I would just say that DPR has been wonderful. They’re awesome,” said COO Dube. “You know, you can get different contractors who will do a really good job for you. But it’s the level of service that’s provided that I think is the differentiator for DPR.”

Dube cited the constant communication and weekly meetings as examples of that service. “Everything was very organized, extremely well presented in terms of what areas were going to be affected, how long it was going to take, the impact of doing that and what can we do to accommodate you? Everything was for the greater good, all wanting a win-win. They just have a very can-do, get-it-done mentality.”

Challenges and Solutions

In addition to working in the highly sensitive, occupied patient areas, there were myriad other challenges and solutions devised by DPR, the owner and the entire project team to successfully complete the project. They included:

**MAJOR RAIN DELAYS**

There were more than 40 days of rain delay that the team had to mitigate. The vertical expansion areas—particularly over such highly sensitive areas as radiology—required crews to remove the roof to build the new walls and then put a new roof on top. Another key area impacted by the weather was the surgery shell space, built between the existing hospital and women’s center tower. By re-sequencing the work and employing intensive, hands-on management of the subcontractors, DPR shaved more than 40 days off the 12-month schedule and still finished on time.
COORDINATION
The project’s overall complexity meant there was a great deal going on all at the same time. About 150 tradespeople worked inside the fully occupied, confined hospital spaces during peak construction. One solution DPR instituted was daily walk-throughs with foremen from each trade. The goal: ensure everyone had what they needed and knew what they had to do to get their work done each day. “We had our hands on every single piece of the puzzle at all times,” Weyant said.

SCHEDULE
Each of the four phases was driven by an accelerated schedule that offered little margin for error. The antepartum expansion began in December 2013 and had to be completed by late October 2014. NICU, PEDS and PICU expansions had a seven-month schedule, beginning in April 2014 with completion that November. The surgery shell phase took place over the course of about one year, completing in early December 2014. The team constantly had to balance its productivity and schedule-related goals against the paramount goal of minimizing patient impact.

MODULAR
For the antepartum expansion—which the team built directly over the existing, busy radiology department—modular construction provided one key timesaving solution. The team’s use of modular units shaved an estimated six weeks from the schedule and about $27,000 off the budget. The team delivered patient rooms with pre-manufactured headwalls, footwalls and finished bathrooms onsite ready for placement.

Modular construction offered a solution, however, it also created additional challenges for crews during the installation and placement process. There was a distinct learning curve involved. For example, the team had to core plumbing drains prior to the delivery of the units. This meant that precise placement

HCA West Houston Medical Center

While a bathroom unit in a hospital patient room can typically contain up to 800 components that dozens of trades install in the field, prefabricating and installing a modular bathroom unit replaces that complexity with a single component installed by a single trade.

Using its prefabrication and modularization experience on the North Austin Medical Center project as a building block, DPR is currently renovating the West Houston Medical Center for HCA. The team used the many lessons learned on that initial project to modify its strategy on West Houston, which is a 26,000-sq.-ft. hybrid operating room renovation and build-out of shell space. Those lessons include—but are not limited to—the following:

LEgSoNS LEAerneD ANd APpLied

• Release long lead items early;
• Visit the factory during fabrication to confirm details and plan for installation; and
• Continuously check the overhead height of trade work to prepare for installation and ensure that there is clearance for installation.

Of the 26 patient-care rooms at West Houston Medical Center, the team built 25 with modular bathroom units. It only “stick built” one bathroom due to its non-conformance to modular unit measurements.

CUSTOMER: HCA
ARCHITECT: Gould Turner Group
DURATION: 8 months
and layout of each unit was critical. The minimal clearance available for maneuvering and placing the modular units inside the extremely tight building space also proved to be extremely tricky. In addition, to get all the drains placed for the prefabricated bathrooms, crews were required to work inside the busy radiology department. They followed a carefully orchestrated plan in each instance and ultimately completed the work with minimal impact.

**PREFABRICATION**

The St. David’s North Austin Medical Center project represented the first major modular application undertaken by Healthcare Corporation of America (HCA)—the project owner and parent company—as well as various other healthcare facilities throughout the U.S. DPR is also currently employing modular construction on another current hospital project for HCA in West Houston. To ensure an even better modular process on that West Houston job, the North Austin team has worked hard to transfer knowledge and share their best practices and lessons learned.

**Conclusion**

Despite the many challenges, DPR finished all the phases as planned and to the accolades of a very happy owner. At completion, Dube said, “I brought sparkling champagne in the boardroom when we went around with our CEO, celebrating with the team because it was quite phenomenal to pull that off in that amount of time. This is just not done every day. It was quite incredible.”

**CUSTOMER: HCA | St. David’s North Austin Medical Center** is a full-service hospital, including the Women’s Center of Texas, a 24/7 emergency department, heart and vascular care, surgery and a kidney transplant center.

**ARCHITECT:**
Earl Swensson Associates, Inc.

**PROJECT HIGHLIGHTS:**

- 32,000-sq.-ft. vertical antepartum expansion over existing radiology, including 26 patient beds
- 20,000-sq.-ft. vertical NICU expansion adjacent to the existing NICU, including 20 new NICU bays
- 25,000-sq.-ft. surgery shell addition connecting the women’s center tower to the operating rooms and sterile core of the existing hospital
- 20,000 sq. ft. in renovations in the ED and PICU

**Photos by Brian Mihealsick**

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